

IN THE CLAIMS

1 1. (currently amended) A method for dynamically allocating and
2 renegotiating bandwidth to traffic having a variable data rate in a network,
3 comprising:

4 measuring a current data rate of the traffic in the network;
5 measuring a current bandwidth allocation of the traffic in the network;
6 predicting a future data rate for the traffic based on the current ~~and~~
7 ~~previous data rates~~ data rate and the current bandwidth allocation; and
8 minimizing a cost function based on the current data rate, the current
9 bandwidth allocation, and the future data rate to determine a future
10 bandwidth allocation for the traffic that minimized a cost of the
11 renegotiation bandwidth over time.

1 2. (original) The method of claim 1 further comprising:
2 determining a renegotiation cost function for the traffic using a time
3 period between a last renegotiation and a current time.

1 3. (original) The method of claim 2 further comprising:
2 increasing a value of the renegotiation cost function if the bandwidth
3 is renegotiated at the current time; and
4 decreasing the value of the renegotiation cost function if bandwidth is
5 not renegotiated at the current time.

1 4. (original) The method of claim 1 further comprising:
2 assigning a first cost functions for an under allocation of bandwidth;
3 assigning a second cost function to the renegotiation; and
4 assigning a third cost function for under utilization of the bandwidth.

1 5. (original) The method of claim 4 further comprising:
2 bounding the first cost function to a size of a buffer used to store the
3 traffic during the under allocation of the traffic.

1 6. (original) The method of claim 1 wherein the cost function is

$$J = w_b b(n) + w_u u(n) + T(n)$$

2 where $w_b b(n)$ is a weighted cost of under allocation, $w_u u(n)$ is a weighted
3 cost of under utilization, and $T(n)$ is a cost of renegotiation the bandwidth.

1 7. (currently amended) A system for dynamically allocating and
2 renegotiating bandwidth to traffic having a variable data rate in a network,
3 comprising:

4 ~~means for measuring a current data rate of the traffic in the network;~~

5 ~~means for measuring a current bandwidth allocation of the traffic in~~
6 ~~the network;~~

7 a predictor configured to predict a future data rate for the traffic based
8 on the a measured current and previous data rates data rate and a measured
9 current bandwidth allocation; and

10 a renegotiation control unit configured to minimize a cost function
11 based on the current data rate, the current bandwidth allocation, and the

- 12 future data rate to determine a future bandwidth allocation for the traffic that
- 13 minimized a cost of the renegotiation bandwidth over time.